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each genus and species and of each author mentioned. The Bavarian Academy of Sciences, which has assisted in its publication, might well have increased its subvention if necessary to provide such an index.—C. R. B.

### Speculative biology.

IN 1875 Pflüger propounded a hypothesis regarding the constitution of organized bodies which may be described as the hypothesis of chemical continuity. Impressed with the extensive polymerization among carbon compounds, especially the proteids, he ventured the suggestion that in an organism polymerization may progress indefinitely, so that the whole protoplasm is not an aggregate of similar molecules having definite molecular weight but may form a single giant chemical molecule. This theory has found few adherents. It is accepted *in toto*, however, by Dr. Georg Hörmann, who proceeds in a recent book<sup>3</sup> to show its adequacy to explain certain biological problems, and, therefore, its inherent probability.

He applies it to the transmission of the impulse in nerve and the phenomena of nerve section; to the contraction of muscle and the discharge from the electric organs of fishes; and discusses the structure of the cell and the rotation of the protoplasm "from the standpoint of the *principle* of chemical continuity." (Hypothesis — principle: are they synonymous?)

Of course the book is pure speculation, and must not be taken as anything else, though we fear the author does not always remember the sandy foundation on which he is building. The various ingenious diagrams, representing atoms of divers interesting forms and positions lend an air of verisimilitude which might deceive the very elect.

Theory we recognize as necessary; speculation is indispensable in the formation of multiple working hypotheses by the investigator; but it may be seriously doubted whether the publication of a speculation is ever worth while. Until we have more intimate knowledge of the chemistry of proteids, speculation of the kind here set forth must be regarded as little more than vanity and vexation of spirit.—C. R. B.

### NOTES FOR STUDENTS.

CONTINUING his observations on the agencies by which insects are attracted to flowers, Professor J. Plateau now gives a large number made on *Salvia horminum* and *Hydrangea opuloides*,<sup>4</sup> confirming his previous statement that they are chiefly attracted by the sense of sight. Neither the col-

<sup>3</sup> HÖRMANN, GEORG: Die Kontinuität der Atomverkettung ein Strukturprinzip der lebenden Substanz. 8vo. pp. iv + 118. figs. 32. Jena: Gustav Fischer. 1899. M 3.

<sup>4</sup> Mém. Soc. Zool. de France 11: 339-375. fig. 4. 1898.